[redacted]

Optimize My Day

User Manual

Visual Scheduler

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CONTENT

1.	INTRODUCTION	3
2.	STARTING-UP	4
3.	MENU SECTION	5
3.1	Refresh	5
3.2	Rollback	5
3.3	Save	5
3.4	Load	5
3.5	Preferences	5
3.6	Geocoder	6
3.7	Navigator	6
3.8	Automatic Planning	6
4.	THE GANTT CHART	8
4.1	Widen chart	8
4.2	Visualizing other days	9
4.3	Symbols	10
4.4	Moving tasks	10
4.5	Retrieve task information	12
4.6	Show engineer information	12
4.7	Advice function	14
4.8	Unplan tasks	15
4.9	Fill routes	16
4.10	Optimizing routes	16
4.11	Show routes	16
4.12	Drag and Drop	17
4.13	Unavailabilities	18
4.14	Group Tasks	19
5.	THE DATA SECTION	22
5.1	Unplanned tasks tab	22
5.2	Log tab	23
6.	THE KPI DATA SECTION	24

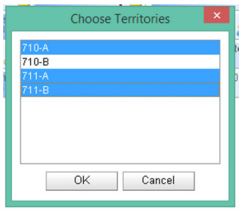
1. INTRODUCTION

This document describes the working method of the Visual Scheduler. It is meant as a user guide for the instruction and can be used as a manual after the instruction. Not all details of the Visual Scheduler are included. Only the processes needed during the planning activities are included. This document is based on the standard settings of the Visual Scheduler. For more details contact your administrator or see the Technical Reference Guide.

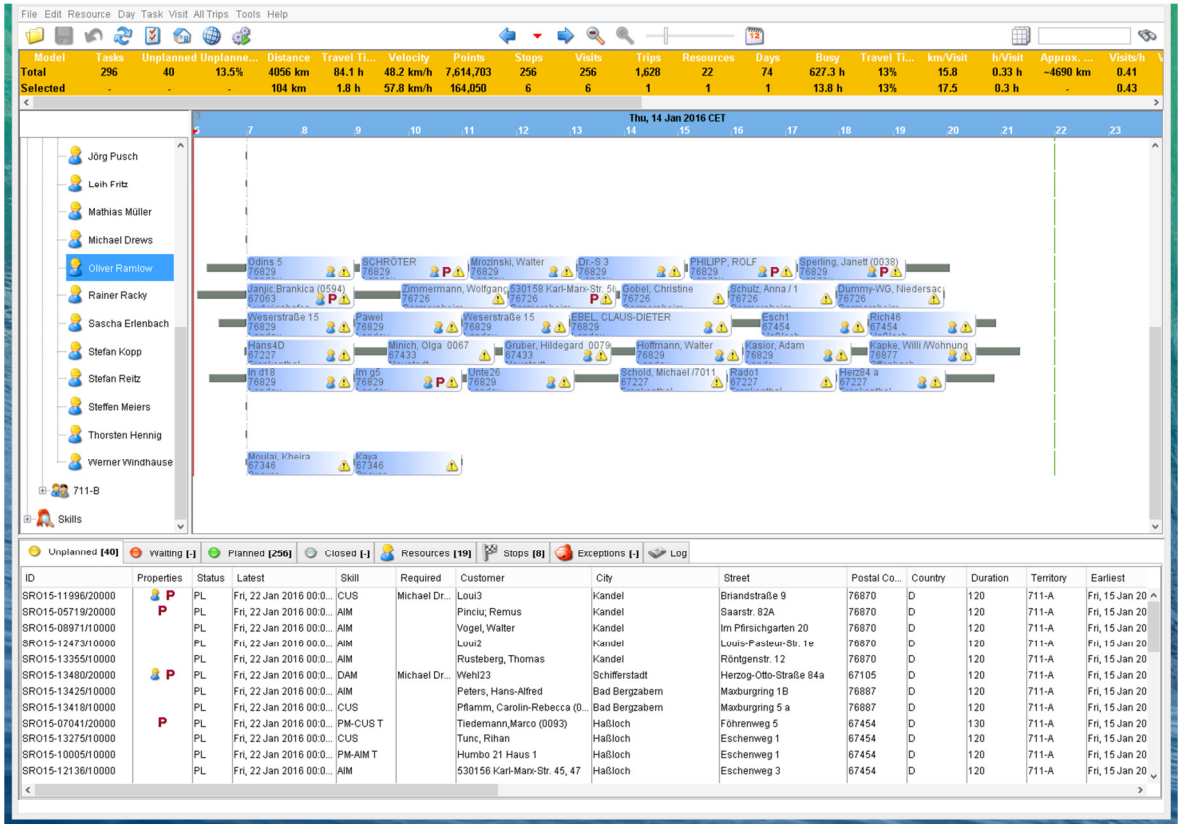
The symbol indicates exercises which have to be carried out by the planners.

2. STARTING-UP

When calling the Visual Scheduler the user may be prompted to choose one or more entries from a list of territories. This is to limit the set of data that will be loaded.



In the main window of the Visual Scheduler the following user interface will be shown:



The Visual Scheduler shows from top to down a section with a menu section, a KPI table section, a Gantt chart section and a tabbed data section. These will be explained in the next chapters.

3. MENU SECTION

The Menu section shows several menu buttons that provide important functionality to the planner.

3.1 Refresh

By clicking the data in the memory of the Visual Scheduler will be synchronized. Depending on the configuration only the availabilities and tasks are retrieved which have been changed since the latest refresh. Datasets that typically don't change over one day like qualifications of engineers or their working schedules are not refreshed.

Important note: It is important to understand the changes made by the planner in the Visual Scheduler are not automatically applied. This gives the planner the opportunity to compare alternatives, without actually sending an update to a mobile worker, colleague planners and/or customers. Only when the planner is sure about the changes, the planning can be committed. The standard way of committing a planning is by pressing the Refresh button. The Refresh button commits only the changes, and at the same time refreshes the dataset for the planner.

3.2 Rollback

The rollback enables the planner to go back to the original starting point. The original starting point is the last moment when one of the following functionality is used: refresh, save or load.

3.3 Save

The save is directly committing the entire planning. Unlike the refresh button, all data is committed regardless whether they have actually changed or not. Also, unlike the refresh button, all data is committed, including resources. Normally, planners should use the refresh button.

3.4 Load

The load button is loading a complete dataset in the Visual Scheduler. Typically when starting up the Visual Scheduler the load of the dataset is done automatically, using the load button in a standard environment is not required. The load button should be used when important changes have been made to the workschedules of resources and/or when new resources are added to the pool of resources.

3.5 Preferences

The preferences button is only available for administrators and/or implementation consultants. For changing the preferences please contact your administrator.

3.6 Geocoder

The geocoder holds an administrative function to optimize the location of the task. The use of this functionality is administrative and therefore not part of this document. Contact your administrator for more information.

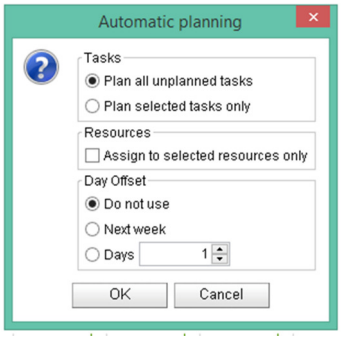
3.7 Navigator

The navigator shows the routes in a visual presentation on a map.

The navigator shows the routes that are visible or are selected in the Gantt chart. To see one route for one resource, select the view in Gantt Chart on the specific day (complete zoom out in the Gantt chart) and select the resource. To see the route for the next day, select the next day in the gantt chart, in the navigator.

3.8 Automatic Planning

The Automatic Planning button provides several options to the planner.



Option 1: Select option ''Plan all unplanned tasks''; if this function is used all unplanned tasks (if possible within constraints) will be planned automatically.

Option 2: Select option ''Plan all unplanned tasks'' and checkbox ''Assign to selected resources only'' and select a resource in the Gantt chart; if this function is used all unplanned tasks (if possible within constraints) will be planned automatically on the selected resource.

Option 3: Select option ''Plan all selected tasks only''; if this function is used all selected unplanned tasks (if possible within constraints) will be planned automatically.

Option 4: Select option ''Plan all selected tasks only'' and ''Assign to selected resources only'' and select a resource in the Gantt chart; if this function is used all selected unplanned tasks (if possible within constraints) will be planned automatically on the selected resource.

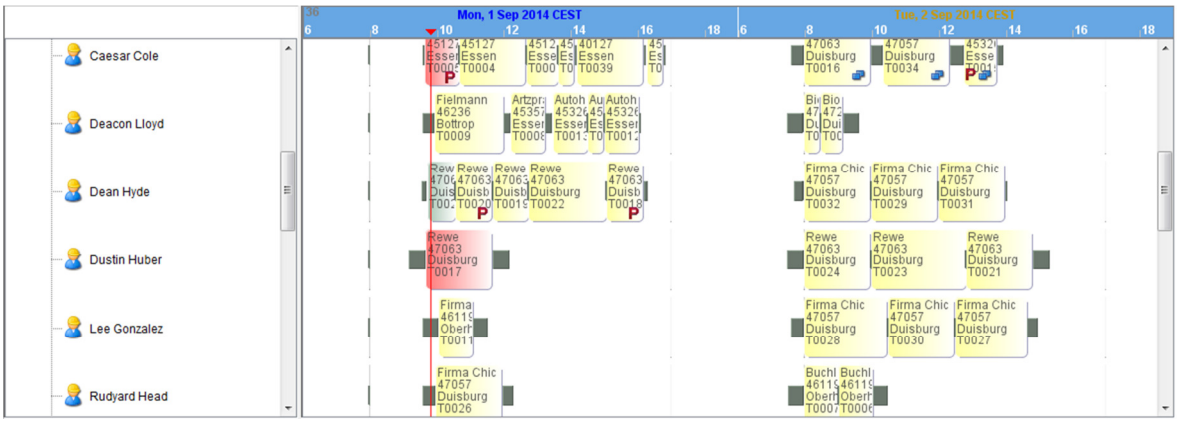
Note: one or more unplanned tasks and resources can be selected by using the CTRL key.

Day Offset: Select options to skip a number of days when planning. The Dialog offers either to

- plan task as soon as possible,
- plan tasks in the beginning of the next week, or
- plan tasks after a number of days that can be defined by the user. This will exclude days on weekends, if work on weekends is not allowed. If 0 days are defined, tasks may start today.

4. THE GANTT CHART

A Gantt chart is a diagram in which one axis shows the engineers and the other shows the days. The diagram shows the tasks for each engineer per day.

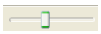


A route always contains a departure and arrival. In case tasks or non availabilities are defined for a day these will be drawn as blocks in the Gantt chart.

The colour of each block indicates the state of the task. The colours can be configured, ask your administrator for more information.

The travel times are visualized with thick lines between the blocks. The current time is presented with a red line. The blue lines indicate the working schedule of the mobile worker.

4.1 Widen chart

By changing the position of the scroll bar  , the height of the lines can be enlarged or reduced. Depending on the height of the blocks more details will be shown in the blocks, for instance:

4.2 Visualizing other days

By clicking the in the menu of the application the shown planning will move one day forward. The will show the planning one day backwards. Holidays, Saturdays and Sundays are indicated with a grey colour (depending on configuration). In case there will be worked only on weekdays, the weekends will not be shown.

To view more than one day it is possible to zoom out with the button. The Gantt chart can show one to five days, a week, a month or a year. It is possible to move the view forwards or backwards with the buttons and .

The can be used to zoom in on the planning. The button sets the focus of the Gantt chart to today.

It is also possible to use the calendar for visualizing other days. The calendar button is to the right of the scroll bar.

Exercise

- Enlarge the blocks so that the complete text of the tasks, including the symbols, is visible.

- Drag the mouse above a block and wait. Write down the information that will be shown.

- Move the view of the planning so that only tomorrow and two days after are visible.

4.3 Symbols

A list of symbols that can be used in the Visual Scheduler is presented below. Depending on the configuration of the Visual Scheduler the symbols may or not be in use.

	Preferred engineer	This symbol is shown with a task which has to be assigned to a specific engineer. In case the task is assigned to a different engineer this has to be confirmed.
	Fixed appointment	This task cannot be replanned when considering date and time. This is the case when a customer has been informed on the planned start time of the task. Depending on the state of the task, the task can be assigned to a different engineer in case there is no preferred engineer.
	Information	The task contains additional information.
	No preferred engineer	In case a task has been assigned to an engineer who is not the preferred engineer, this symbol will be shown.
	Task	General symbol for tasks.
	Unavailability	General symbol for unavailabilities.
	Same Group	The planning still contains tasks for the same Group. This functionality is mostly in use when task are related and/or on the same location. The menu makes it possible to view the other tasks for this Group combined. The selected task will always be shown first. In case no groups are used, this is the sign for a task for the same customer. Note: with CTRL it is possible to plan same group tasks separately.
	Warning	The task is delayed or does not meet the conditions. Detailed information on the warnings is visible in the **Warnings** folder of the task window. In case the configuration allows a confirmation of the information, the symbol will no longer be shown in the **Warnings** folder when confirmed.
	Part	This symbol indicates the task needs a part.
	Automatic planning	This task may be planned automatically.

4.4 Moving tasks

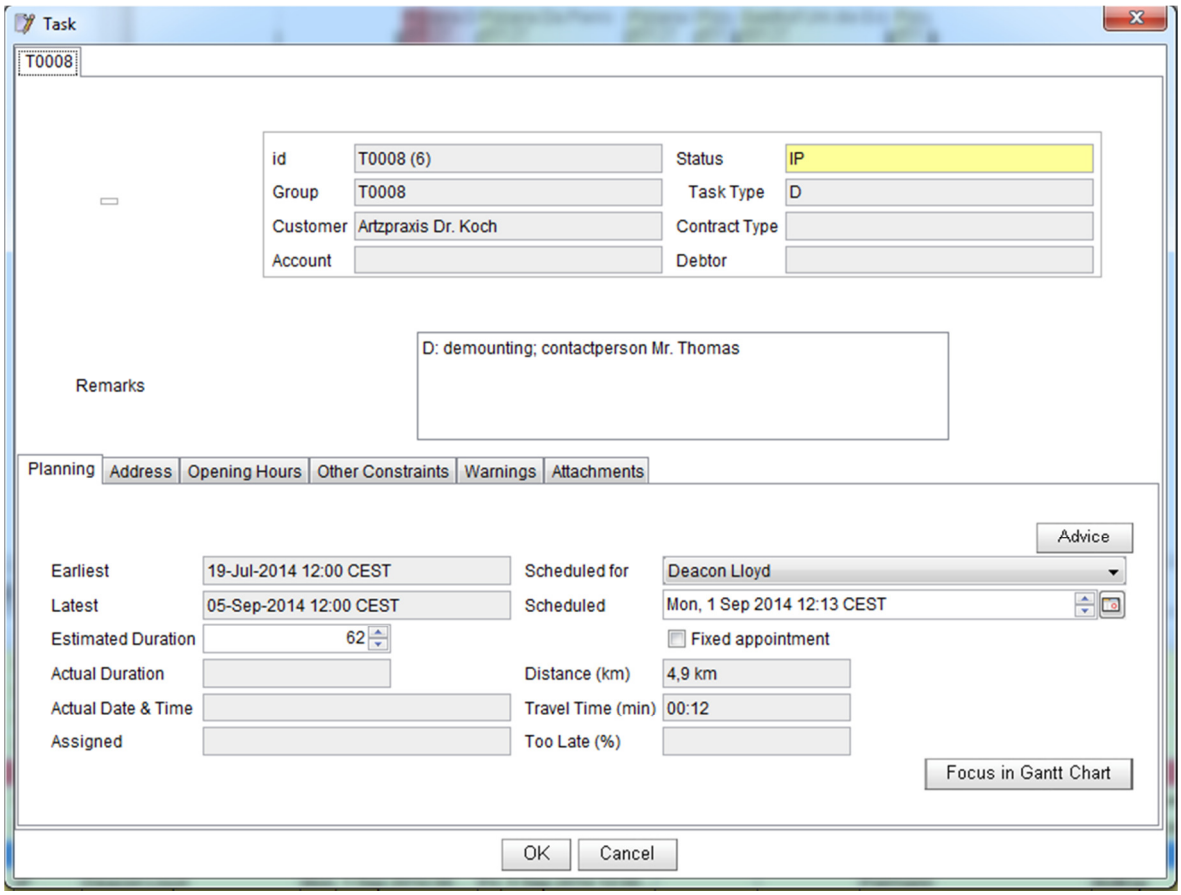
Within the Gantt chart it is possible to reassign planned, but not executed tasks to a different route. Select the planned task and drag it to a different place in the route or to a different

route from the same or a different engineer. The Visual Scheduler will verify whether it is possible to change the task to this place of the route. When a prior condition (for instance, resemblance with quality) is not applied to, the Visual Scheduler will ask for a confirmation.

The points for replacing the task will be calculated. In case higher costs are the result of the replacement, the Visual Scheduler will ask for confirmation. In case, the costs are lower no confirmation is needed.

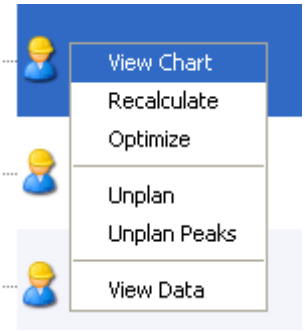
4.5 Retrieve task information

By double-clicking a task detailed information on the task will be made visible. For instance:



4.6 Show engineer information

Right-click (or double click) a resource in the tree structure and select **View Data**. Detailed information of the resource is visualized.

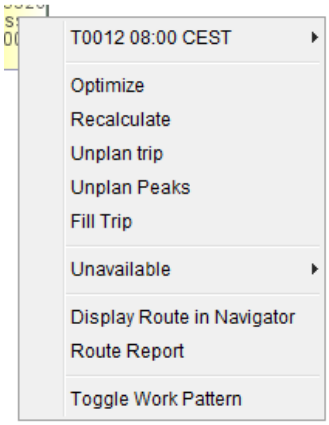


Exercise

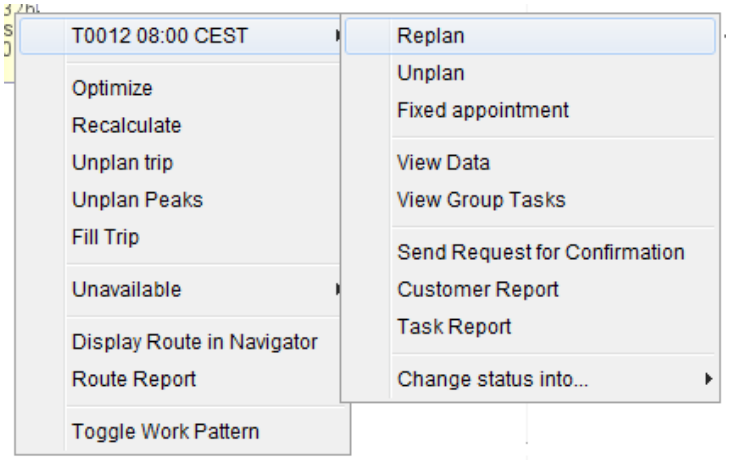
- Drag the mouse above a block and wait. Write down the information that is shown.
- Move the planned task to the next working day.
- Double-click the engineer. What happens?
- Look for a task with a warning. What is the reason for the warning?

4.7 Advice function

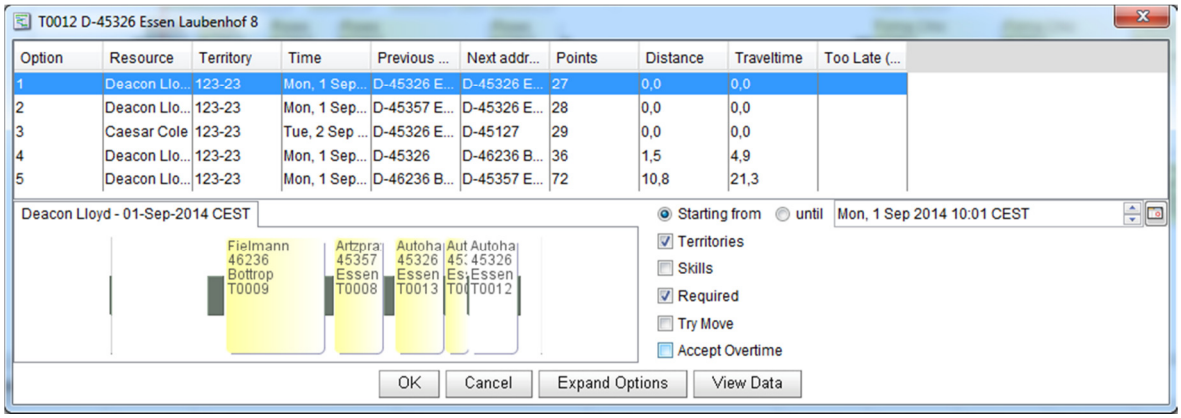
Beside the manual assignment of a task to a different place in the planning it is also possible to ask for advice. The Visual Scheduler calculates the best alternatives in the current situation. Right-click a task, the following menu will be shown:



The above function shows the task number and the planned start time. By moving the mouse to the right, the options for this task are visible:



Select **Replan** to ask for advice on a new planning position. After the necessary calculations, the list of alternatives is shown in a separate window, for example:



The line on the top is the best alternative in the current situation. All alternatives below are less good. However, it can be necessary to select another alternative. In case the list does not show enough alternatives the button **Expand Options** can extend the list.

4.8 Unplan tasks

The task options also allow the option **Unplan**. The task is removed from the planning end placed back in the list of unplanned tasks. Tasks can only be removed from the planning in case the status of the tasks allows it.

4.9 Fill routes

By right-clicking a route in the Gantt chart, the option **Fill route** can be selected. Tasks which are near the above tasks are added to the route. The maximum distance is preserved. This configuration can be changed. The feature does not look at other engineers in the planning. All tasks which are nearby are added until the route has been filled completely. There might still be tasks nearby which will not be included in the route.

4.10 Optimizing routes

The order of the tasks can be determining for the costs of a specific planning. By exchanging tasks, better routes can be made. The Visual Scheduler provides this function via the following menu:

Within the Gantt chart the option **Optimize → Route** is available.

Right-click on an engineer in the tree structure (optimization of all routes of an engineer).

Right-click the head of a day (optimization of all routes on a day).

During the optimization time appointments with the customer and opening times are typically (depending on implementation) kept in consideration.

There are different ways of optimization. A task can be assigned to a different engineer if this engineer is working on a task nearby this location. This way the travel expenses are reduced.

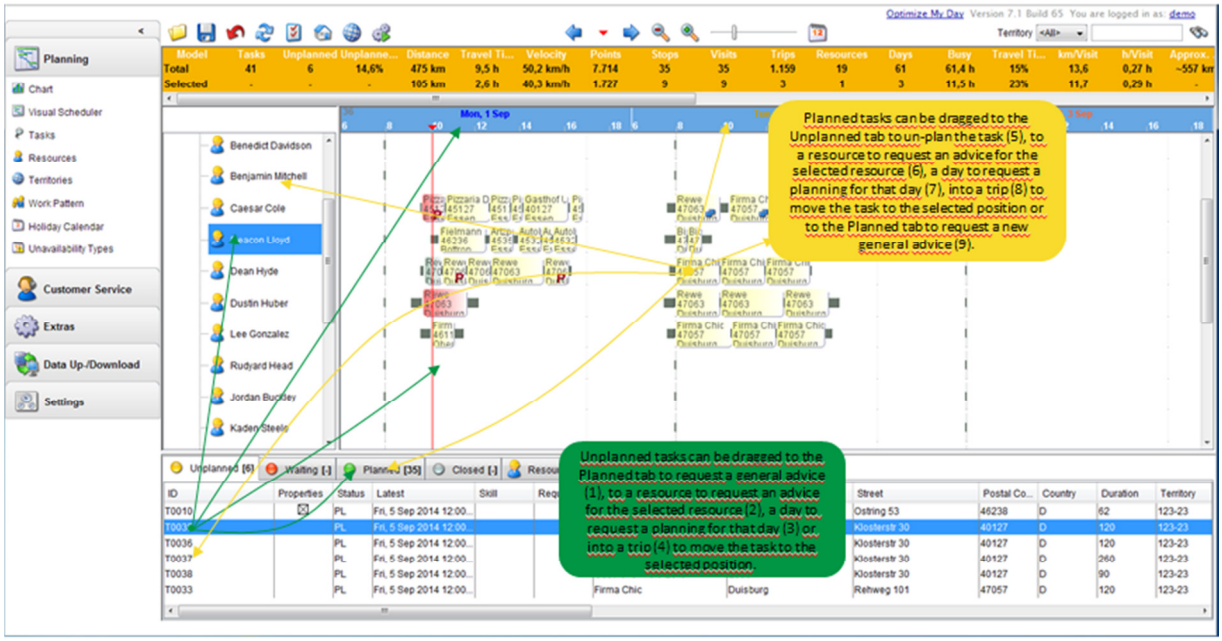
Exercise

- Which alternatives are available for the first three tasks in the planning?
- Look for a way to unplan all tasks from the first route without having to delete each task separately.
- Optimize all route of tomorrow.

4.11 Show routes

Routes can be presented in the overview window of the Visual Scheduler. By clicking on one or multiple engineers in the tree structure the selected days are presented in the overview. To present a route in the Navigator, right-click a route and select **Navigate to Location**.

4.12 Drag and Drop



Within the Visual Scheduler, ''Drag and Drop'' functionality is supported. There are several ways of using drag and drop in the Visual Scheduler:

1. Drag the unplanned task to the tab ''Planned'' for a general advice
2. Drag the unplanned task to the selected resource, to get an advice for planning this task on the selected resource
3. Drag the unplanned task to the day to get an advice to plan the activity on that day
4. Drag the unplanned task into a daytrip of a resource, to plan the task on the selected position (plantime).
5. Planned task can be dragged to the unplanned tab to un-plan the task
6. Planned task can be dragged to a selected resource, to get an advice for planning this task on the selected resource.
7. Drag the planned task to the day to get an advice to plan the activity on that day
8. Drag the planned task into a daytrip of a resource, to plan the task on the selected position (plantime)
9. Drag the planned task to the tab ''Planned'' for a general advice

4.13 Unavailabilities

Whilst calculating routes the Visual Scheduler considers the agenda of the engineers. New unavailabilities like illness, leave, meetings, etc. can be added, but only if the interface with administrative system allows for this. For each unavailability the home address of the engineer is selected as a location, but the address can be changed. The route calculation uses the entered address as the location of the unavailability.

For adding an unavailability right click on the day of the resource and select ''unavailable'', an unavailability can be registered for a full day or a part of a day.

4.14 Group Tasks

Group Tasks is a functionality that takes into account that certain Tasks are related to each other. When the Tasks are related to each other the Visual Scheduler will understand this relationship and when using the planning algorithms and/or drag and drop functionality will take these relationships into account.

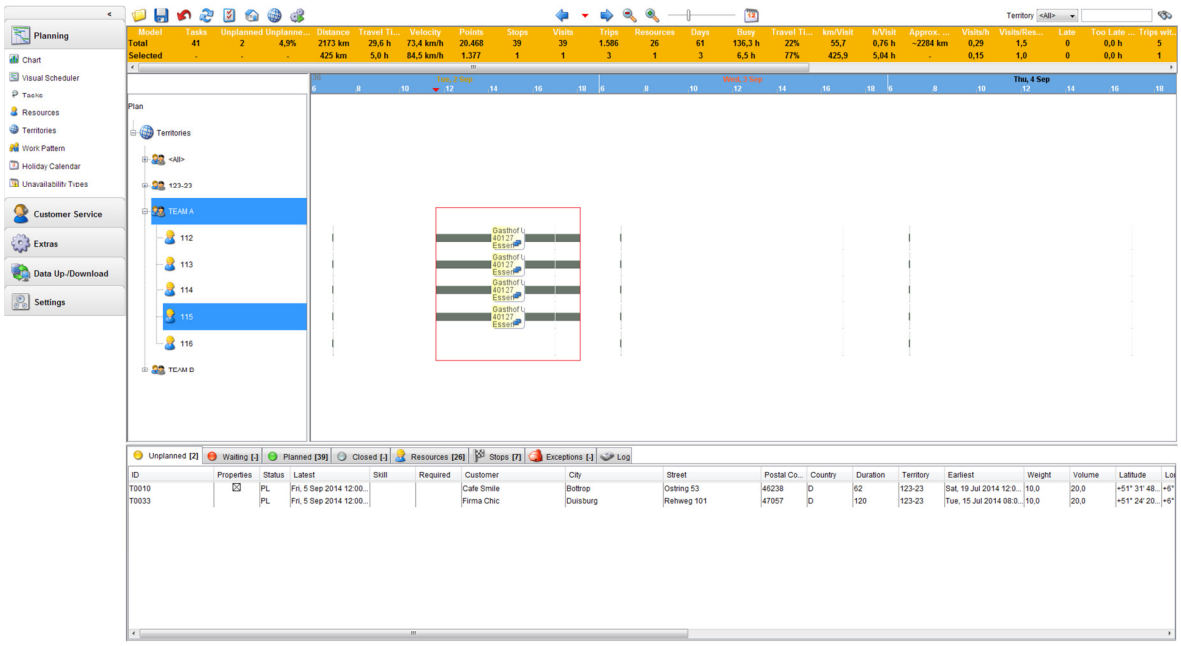
There are three ways two or more tasks can be related to each other:

1. Parallel
2. Sequential
3. Parallel and Sequential at the same time (only possible with three or more tasks)

Parallel

A Parallel relationship between tasks means that two or more tasks have to be planned on the same time. The tasks need to be done by two or more mobile workers.

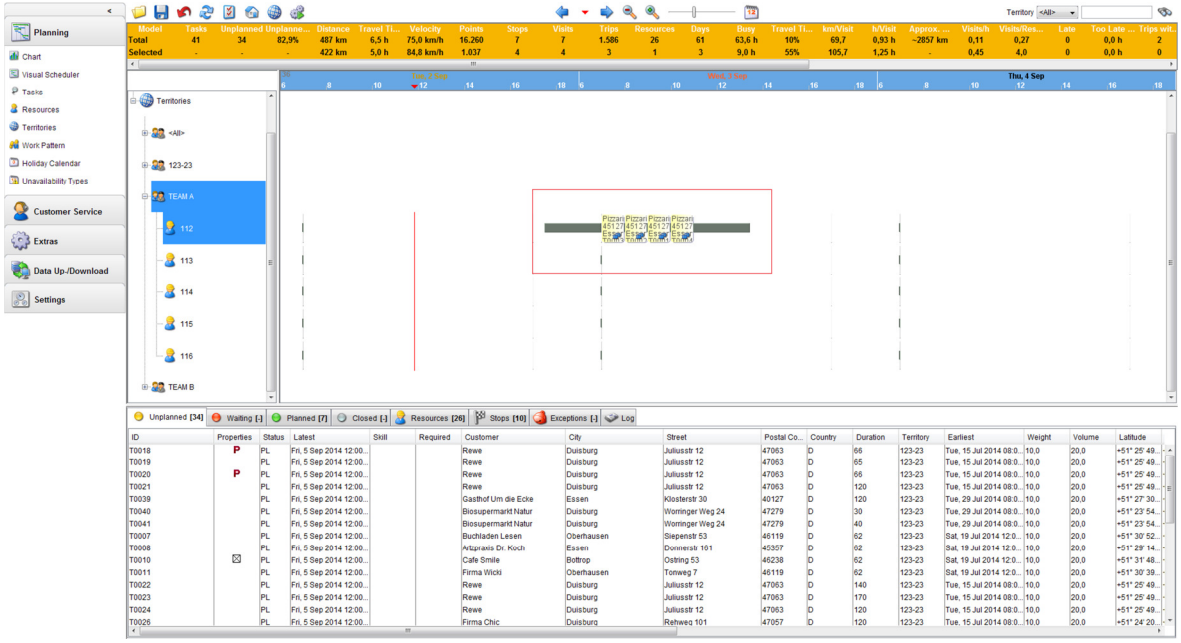
Example of parallel planning:



Sequential

A sequential relationship between tasks means that two or more tasks have to be planned after each other.

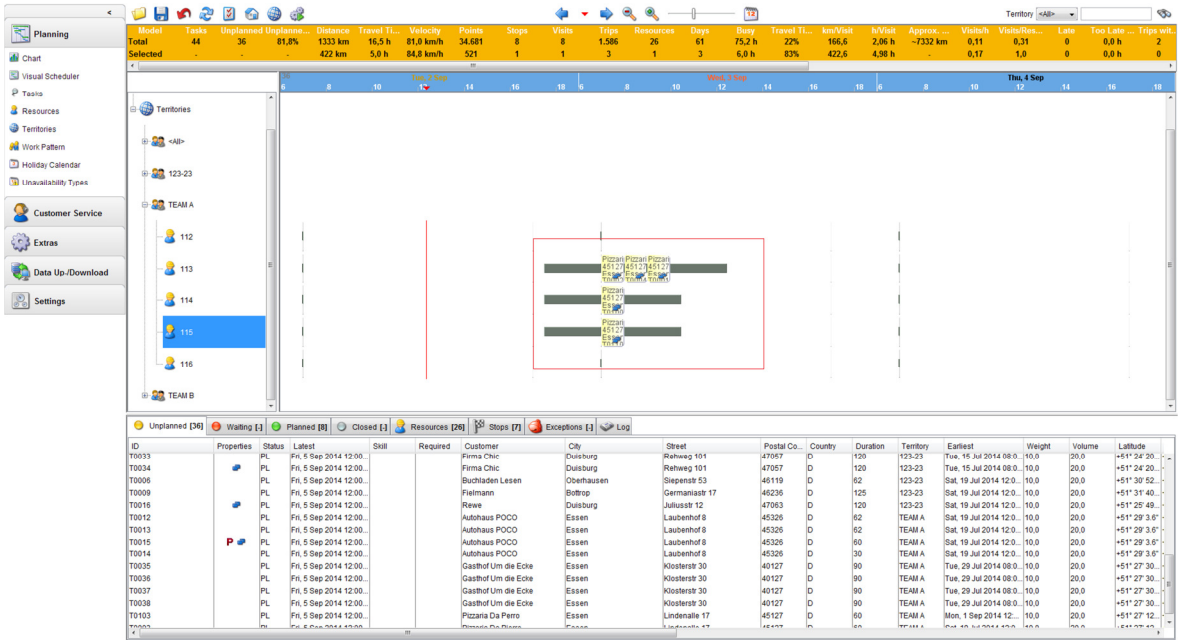
Example of sequential planning:



Parallel and Sequential at the same time

This is a combination of parallel and sequential at the same time. Which is only possible with three tasks or more.

Example of parallel and sequential at the same time:



Note: Group Tasks is an optional functionality and is not always implemented. Ask your administrator if this functionality applies to your system.

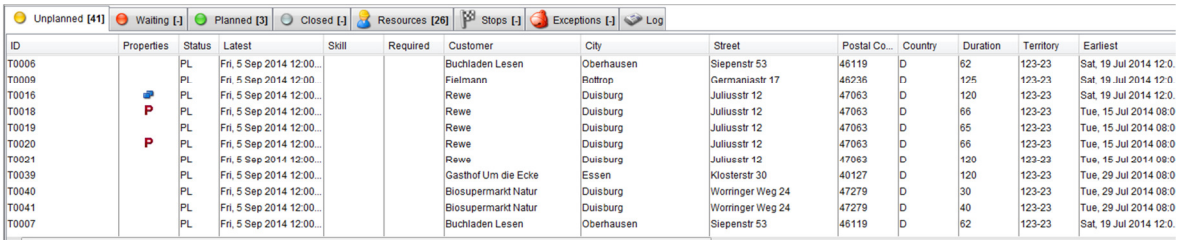
Note: Group Tasks can be implemented in various ways mostly depending on the way the ERP/CRM system operates. If Group Tasks is implemented ask your administrator for further details.

5. THE DATA SECTION

The Data section shows data in a table format. The following folders with information about the planning are available:

- Unplanned tasks
- Tasks which are waiting (for instance waiting for parts)
- Planned tasks
- Completed tasks
- Resource data
- Route data of the selected engineers and days
- List of exceptions
- Logging

See below an example of the data section:

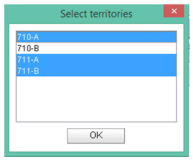


ID	Properties	Status	Latest	Skill	Required	Customer	City	Street	Postal Co...	Country	Duration	Territory	Earliest
T0006		PL	Fri, 5 Sep 2014 12:00...			Buchladen Lesen	Oberhausen	Siepenstr 53	46119	D	62	123-23	Sat, 19 Jul 2014 12:0.
T0009		PL	Fri, 5 Sep 2014 12:00...			Fielmann	Bottrop	Germaniastr 17	46236	D	125	123-23	Sat, 19 Jul 2014 12:0.
T0016		PL	Fri, 5 Sep 2014 12:00...			Rewe	Duisburg	Juliusstr 12	47063	D	120	123-23	Sat, 19 Jul 2014 12:0.
T0018	P	PL	Fri, 5 Sep 2014 12:00...			Rewe	Duisburg	Juliusstr 12	47063	D	66	123-23	Tue, 15 Jul 2014 08:0
T0019		PL	Fri, 5 Sep 2014 12:00...			Rewe	Duisburg	Juliusstr 12	47063	D	65	123-23	Tue, 15 Jul 2014 08:0
T0020	P	PL	Fri, 5 Sep 2014 12:00...			Rewe	Duisburg	Juliusstr 12	47063	D	66	123-23	Tue, 15 Jul 2014 08:0
T0021		PL	Fri, 5 Sep 2014 12:00...			Rewe	Duisburg	Juliusstr 12	47063	D	120	123-23	Tue, 15 Jul 2014 08:0
T0039		PL	Fri, 5 Sep 2014 12:00...			Gasthof Um die Ecke	Essen	Klosterstr 30	40127	D	120	123-23	Tue, 29 Jul 2014 08:0
T0040		PL	Fri, 5 Sep 2014 12:00...			Biosupermarkt Natur	Duisburg	Worringer Weg 24	47279	D	30	123-23	Tue, 29 Jul 2014 08:0
T0041		PL	Fri, 5 Sep 2014 12:00...			Biosupermarkt Natur	Duisburg	Worringer Weg 24	47279	D	40	123-23	Tue, 29 Jul 2014 08:0
T0007		PL	Fri, 5 Sep 2014 12:00...			Buchladen Lesen	Oberhausen	Siepenstr 53	46119	D	62	123-23	Sat, 19 Jul 2014 12:0.

Each table except the table with route data can be sorted by clicking the head of a column. A second click will sort the data in reverse order. Columns can also be repositioned to another position by dragging them to the desired postion. Columns can be shown or hidden by right clicking on the headers.The route table is sorted by date/time of the stops.

Data in the Visual Scheduler can be limited by choosing from one or more territories on initial loading. The loaded set of data can be additionally narrowed by selecting a subset of the loaded territories, after pressing the button in the tool bar.

A dialog is shown that lists all loaded territories. It allows multiple selection of its list entries. Use the shift-key when selecting two or more consecutive entries. Use the control-key to select or deselect single entries.



This filter narrows the set of tasks in the data section. It does not change the Gantt-chart. The Gantt-chart will continue to show all loaded territories, resources and tasks. Note that if a task is unplanned from the Gantt-chart and it does not belong to the selected territories, it will consequently not appear in the unplanned tab of the data section.

5.1 Unplanned tasks tab

Just like in the Gantt chart functions can be called upon by right-clicking the tasks or engineers. For instance, by right-click a line in the list of unplanned tasks the Advice function is available. Also other plan algorithms are available. Most of those algorithms are important to plan multiple tasks. Read the Technical Reference Guide for a description of the algorithms.

5.2 Log tab

All steps executed whilst using the Visual Scheduler are protocolled. This section shows these messages. Depending on the configuration only part of the messages will be shown. The protocol presents maximally the last 50.000 characters. A complete overview of the messages can be found in the file *s4log.xml* in the *log* directory of the installation, after the application has been shut down.

6. THE KPI DATA SECTION

This section shows a number of statistical indicators for the planning. The statistical indicators can help to improve the quality of the planning to keep an overview whilst working with the Visual Scheduler.

To show or hide specific columns, right click on the headers.

See below an example of the statistic section:

Model	Tasks	Unplanned	Unplanne...	Distance	Travel Ti...	Velocity	Points	Stops	Visits	Trips
Total	690	215	31.2%	21,473 km	364.9 h	58.8 km/h	140,565,092	659	475	7,878
Selected	-	-	-	0 km	0.0 h	-	0	0	0	0

The 'total' row contains information on the whole of the planning, as it is currently loaded, taking territory selection into account. The 'selected' row corresponds to the selected resources and visibile time range of the Gantt chart.

The following indicators are available:

KPI	Description
Tasks	The total number of tasks.
Unplanned	The number of unplanned tasks.
Unplanned (%)	Percentage of tasks that are not planned.
Distance	The total distance for all planned tasks and breaks.
Travel time	Time traveling to a task (travelDuration).
Velocity	The average speed (km/h) for all travels.
Points	The number of points for the planning (less is better).
Stops	The total number of stops (tasks, breaks, arrival, departure).
Visits	The total number of visits (task to trip assignments).
Trips	The total number of trips.
Resources	The total number of resources.
Days	The total number of days of the plan.
Busy	Time executing a task (duration of all tasks).
Travel Time/Busy	The ration travel / busy time.
Km/Visit	Average travelled distance per visit.
h/Visit	Average time spend per visit.
Approx.Distance	Approximation of the total distance when all tasks are planned.
Visits/h	Average number of visits per hour.
Visits/Resource	Average number of visits per resource.
Late	Number of tasks serviced too late.
Too Late (h)	Total time too late.
Trips with Overtime	Number of trips with overtime.
Overtime	Total overtime.

Trips without Tasks	Number of trips with no tasks but with a shift (departure, arrival)
Skill Mismatches	Number of tasks with mismatching skills.
Skill Level Mismatches	Number of tasks with mismatching skill levels.
Territory not sypported	Number of tasks for unsupported territories.
Preferred Mismatch	Number of tasks with mismatching preferred resources.
Waiting	Time a resource is not traveling, but can't start to execute, e.g. because of opening hours or earliest.
Idle	The Idle Time comprises the waiting time and other times the resource is not working.
Empty Trips	Number of trips without a shift (departure, arrival)
Unplanned (h)	Total estimated duration of all unplanned tasks.
Available	Time a resource is available to travel or execute a task (arrival - departure).
Reserved	Total unavailable time (breaks).